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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
BLACKMAN, ROCHELLE ANN J	
ART UNIT	**PAPER NUMBER**
2851	

DATE MAILED: 06/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/790,977	KOIDE, JUN	
	Examiner	Art Unit	
	Rochelle Blackman	2851	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 April 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *3/01/04 & 4/15/05* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *3/10/05*
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to claims 1-14 have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

Claim 1 is objected to because of the following informalities: on line 2 of the claim, "cathode" should be - -cathode electrode- - and "an electrode" should be - -anode electrode- -. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-14 rejected under 35 U.S.C. 103(a) as being unpatentable over Robinson et al. (U.S. Patent No. 6,260,972) in view of Gold (U.S. Patent No. 5,589,726).

Robinson discloses an illumination optical system (see FIGS. 1-15) a light source (see 4 of FIGS. 1 and 2) which is a discharge gas exciting arc tube (see *Metal-Halide* in col. 3, lines 39-40) having cathode electrode and anode electrode (see elongated tubes

of "light source" 4 in FIGS. 1 and 2); an optical integrator (see 6, 14 of FIGS. 1 and 2 and 66, 68 in FIGS. 8 and 9) which uses a lens array (also see 6, 14 of FIGS. 1, 2, and 5 and 66, 68 in FIGS. 8 and 9) to perform splitting of a luminous flux incident as a generally collimated luminous flux from the light source in a first axis direction in a two-dimensional section orthogonal to a traveling direction of the luminous flux; and a polarization conversion element (see 16, 18 of FIGS. 1, 2, and 5) which includes a polarization beam splitter array (see 18 of FIGS. 1, 2, and 5), a plurality of 1/2 wave plates (see 62 of FIG. 5), and a mask (see 16 of FIGS. 1, 2, and 5), the polarization beam splitter array having a plurality of polarization beam splitters (see 54 of FIG. 5) arranged in multiple stages corresponding to a plurality of predetermined lens areas (see lens on "lens array" 6, 14 in FIGS. 1 and 2 and see 70, 76 of "lens array" 66, 68 in FIGS. 8 and 9) in the lens array, each of the 1/2 wave plates rotating a polarization direction of first polarized light (see 58 of FIG. 5 – P polarized light) substantially 90 degrees out of the first and second polarized light (see 60 of FIG. 5 – S polarized light) with polarization directions orthogonal to each other split by each of the polarization beam splitters, and the mask covering a plurality of areas (see areas covered by 16 in FIG. 5) out of incident surfaces of the polarization beam splitter array to prevent incident of the second polarized light on each of the 1/2 wave plates; wherein the mask has light-transmitting portions (see 52 of FIG. 5), and a luminous flux transmitted through each light-transmitting portion of the mask has light intensity distribution in which a substantially central portion thereof is the highest and the light intensity gradually becomes low toward a peripheral region thereof (the "light intensity" in a "central

portion" of aperture 52 is considered to be higher than at the sides of the aperture, due to fact that the "central portion" of aperture 52 is free from any sort of light masking and also see the result of using "lens array" 66, 68 in FIGS. 7 and 11); wherein the illumination optical system illuminates an illumination surface in a generally rectangular shape, and the first axis direction is a short side direction of the illumination surface (see FIG. 12); further comprising optical intensity converting member for converting light intensity distribution in a second axis direction orthogonal to the first axis direction on the two-dimensional section (also see 6, 14 of FIGS. 1, 2, and 5 and 66, 68 in FIGS. 8 and 9); wherein the illumination optical system illuminates an illumination surface with a generally telecentric luminous flux, and light intensity of the luminous flux on the illumination surface varies depending on a deviation angle of an incident ray with respect to a normal to the illumination surface, and the illumination optical system illuminates the illumination surface such that, in the light intensity distribution, a ratio of angle widths at which light intensity reaches half of a peak value in each of two axis directions orthogonal to each other on the illumination surface is an aspect ratio of 2:1 or higher (see FIGS. 6-15 and disclosure thereof); wherein, in the light intensity distribution, a ratio of an angle width at which light intensity reaches half of a peak value in a second axis direction orthogonal to the first axis direction to an angle width at which light intensity reaches half of a peak value in the first axis direction is an aspect ratio of 2:1 or higher (also see FIGS. 6-15 and disclosure thereof); wherein the illumination optical system illuminates an illumination surface with a generally telecentric luminous flux, and light intensity of the luminous flux on the illumination surface varies depending

on a deviation angle of an incident ray with respect to a normal to the illumination surface, and in the light intensity distribution, a maximum value of an angle width at which light intensity reaches half of a peak value in one of two axis directions orthogonal to each other on the illumination surface is twice or more a maximum value of an angle width at which light intensity reaches half of a peak value in the other direction (also see FIGS. 6-15 and disclosure thereof); wherein, in the light intensity distribution, a maximum value of an angle width at which light intensity reaches half of a peak value in a second axis direction orthogonal to the first axis direction is twice or more a maximum value of an angle width at which light intensity reaches half of a peak value in the first axis direction (also see FIGS. 6-15 and disclosure thereof); a projection display optical system (see FIGS. 1-15) comprising: the illumination optical system; a spatial light modulator (see 26, 30, 36 of FIGS. 1 and 2) which modulates a luminous flux emerging from the illumination optical system by a group of pixels arranged two-dimensionally; and a projection lens (see 40 of FIGS. 1 and 2) which projects the luminous flux modulated by the spatial light modulator onto a projection surface (see *screen* in col. 3, lines 52-57); a projection display apparatus (see FIGS. 1-15) comprising: a light source (see 4 of FIGS. 1 and 2) which is a discharge gas exciting arc tube (see *Metal-Halide* in col. 3, lines 39-40) having a cathode electrode and an anode electrode (see elongated tubes of "light source" 4 in FIGS. 1 and 2); an image display system (see FIGS. 1-15) comprising: the projection display apparatus; and a screen (see *screen* in col. 3, lines 52-57) which forms the projection surface, wherein the image display system allows an observer to observe a projected image with one of divergent reflection light from the

screen and divergent transmission light through the screen, each light having predetermined directivity (see FIGS. 6-15); a light source (see 4 of FIGS. 1 and 2) in which a cathode electrode and an anode electrode are provided (see elongated tubes of "light source" 4 in FIGS. 1 and 2); a lens array (see 6, 14 of FIGS. 1, 2, and 5 and 66, 68 in FIGS. 8 and 9) in which a plurality of lenses (see lens on "lens array" 6, 14 in FIGS. 1 and 2 and see 70, 76 of "lens array" 66, 68 in FIGS. 8 and 9) are arranged in a first direction substantially orthogonal to an illumination direction, each lens condensing a part of a luminous flux from the light source in the first direction; and a mask (see 16 of FIGS. 1, 2, and 5) in which light-transmitting portions (see 52 of FIG. 5) transmitting luminous fluxes condensed by the lenses and light-blocking portions (see 16 in FIGS. 1, 2, and 5) blocking the luminous fluxes condensed by the lenses are arranged alternately in the first direction; a polarization beam splitter array (see 18 of FIGS. 1, 2 and 5) in which first polarization beam splitters (see 56 of FIG. 5 - polarization beam splitters w/ elements 62 attached) and second polarization beam splitters (see polarization beam splitters w/o element 62 attached) are arranged alternately in the first direction, each first polarization beam splitter (see 56) reflecting a first polarized light (see 60 of FIG. 5) out of transmitted light (see 50 of FIG. 5) through the light-transmitting portion and transmitting a second polarized light (see 58 of FIG. 5) out of the transmitted light, the polarization direction of the second polarized light (see 58 of FIG. 5) being rotated by substantially 90 degrees from the polarization direction of the first polarized light (see 60 of FIG. 5), each second polarization beam splitter (see polarization beam splitters w/o element 62 attached) reflecting the first polarized light (see 60 of FIG. 5) reflected by the

first polarization beam splitter (see 56 of FIG. 5 - polarization beam splitters w/ elements 62 attached) in a direction substantially parallel to the transmitting direction of the second polarized light (see 58 of FIG. 5); wave plates (see 62 of FIG. 5) which rotate the polarization direction of the transmitted light substantially 90 degrees and are provided such that the polarization direction of the second polarized light (see 58 of FIG. 5) from the first polarization beam splitters (see 56 of FIG. 5 - polarization beam splitters w/ elements 62 attached) and the polarization direction of the first polarized light (see 60 of FIG. 5) from the second polarization beam splitters (see polarization beam splitters w/o element 62 attached) are aligned with each other (see polarization direction of resulting outputted polarized light 64 and outputted polarized light 60 in FIG. 5); a light modulator (see 26, 30, 36 of FIGS. 1 and 2) which modulates incident light; and a projection optical system (see 40 of FIGS. 1 and 2) which projects modulated light by the light modulator; a screen which has a projection surface (see *screen* in col. 3, lines 52-57).

Robinson illustrates a "light emission area" of "light source" 4 being closer to one electrode than other in FIG. 2, but does not appear to disclose the light emission area being "closer to the cathode electrode than the anode electrode" nor the light source being of a "direct current drive type" or exciting the discharge gas by applying a "direct current voltage".

Gold teaches providing a light source (see 30 of FIGS. 1 and 4) of a direct current drive type (see col. 2, lines 64-66) having a light emission area (see 38 and 43

of FIG. 4) closer to a cathode electrode (see 34 of FIG. 4) than an anode electrode (see 36 of FIG. 4).

It would have been obvious to one ordinary skill in the art at the time the invention was made to provide the Robison reference with a light source of a direct current type having a light emission area closer to the cathode electrode than the anode electrode, as taught by Gold in order to provide an arc lamp that produces a high intensity source of light and enhances performance for projection display systems (see col. 1, lines 51-52 and col. 2, lines 2-3).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rochelle Blackman whose telephone number is (571) 272-2113. The examiner can normally be reached on M-F 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on (571) 272-2258. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RB

JUDY NGUYEN
SUPERVISORY PATENT EXAMINER